

PLAGIOSTOMATA OF THE PACIFIC.

PART III.

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PLATES XLV. and XLVI.

1. HETERODONTUS ZEBRA. Grey.

Pl. XLV.

Cestracion Zebra Grey. Zool. Misc., p. 5.

Heterodontus zebra Grey. Chondropt., p. 61 ; Bleek, Verh. Bat., Gen. 26 ; Act. Soc. Sc., Neerl., I. Amboyna, p. 71.

This species has been for many years considered as simply a synonym or variety of *Heterodontus Phillippi*, and as such it has been recorded in Gunther's Catalogue of Fishes. We, however, in our first paper on the "Plagiostomata of the Pacific," gave it as our opinion (1) that the Indian and Japanese Cestracions would prove on examination to be a distinct or possibly two distinct species. Some years after that paper was written we published Part II. of the "Plagiostomata of the Pacific," (2) in which we gave a detailed description and figure of a *Heterodontus*, which the Australian Museum had received from Japan.

We recognised that specimen as the fish figured under the name of *Cestracion Phillippi* in Perry's United States Expedition to Japan, and we thought it not unlikely that it might be the *C. zebra* of Grey. In the absence, however, of any proof of its identity with that species, and finding it to be undoubtedly distinct from *Phillippi*, we gave it the name of *Japonicus*.

We have now to record the existence of another species of *Heterodontus* which is undoubtedly the *C. zebra* of Grey. It is an inhabitant of the China Sea ; was captured at Swatow, and was

(1) Proc. Linn. Soc., N. S. Wales, Vol. III., p. 313.

(2) Proc. Linn. Soc., N. S. Wales, Vol. VIII., p. 426.

procured by Mr. Ramsay from the Chinese Court at the International Fisheries Exhibition in London, in the year 1884. The specimen is a young female, and has the characteristic specific marking, as is the case with the young of all the species, very distinct.

The head differs but slightly from that of *H. japonicus*. The teeth could not be very satisfactorily examined without a lateral incision through the cheek, which, as the specimen is unique, could not be permitted, but the anterior teeth and a portion of the lateral pavement-like teeth were quite visible through the orifice of the mouth.

The front teeth are each armed with 5 cusps; the three middle cusps are the largest, but the exterior ones, though small and obtuse, are quite distinct (fig. 4.) The centre rows of these front teeth have the central cusp large and perpendicular, while in the lateral rows, it is, in proportion to the other cusps, smaller and recumbent. (Fig. 5.)

In the extreme lateral row on each side of these front teeth the united cusps take the form of a longitudinal crest. The lateral pavement-like teeth are narrow, and show a median longitudinal line. In the upper jaw the cuspid teeth are in 15 rows, the lateral in four; in the lower jaw, 11 of the one and 4 of the other.

Nasal flap long. The upper labial fold covering partly the lower fold, turns round the corner of the mouth, and enclosing the lower labial fold, forms a second lower fold, of which only a margin is visible. This peculiarity is seen where the upper fold is turned up as in fig. 7. These folds are thin skinned and with thinly scattered tentacles.

The dorsal fins are very falcate, the first about double the size of the second; the spines are large, acutely pointed, and sword-shaped, the sides being very flat and compressed and prominently ridged on the dorsal edge; the anal fin is small and falcate; the caudal is longer and more falcate than in *H. japonicus*. The colour is a pale brownish-yellow, with numerous bars of dark brown disposed in alternate broad and narrow bands from the snout to the extremity of the tail, in all over twenty in number, that on

the snout triangular, the next forming, over the eyes, two broad bars separated by a narrow belt of ground colour, two others of the same kind on the nape, then one rather narrower, a double one again at the dorsal spine, extending on the pectoral fin, and so on, broad double and single bands alternating to the middle of the tail ; these bands in no case extend across the belly.

2. MYLIOBATIS PUNCTATUS. N. sp.

Pl. XLVI. Figs. 1-6.

More than one specimen of this remarkable Ray was captured by one of the authors of this paper (N. de Miklouho-Maclay) during a visit to the Admiralty and Lub, or Hermit Islands, in the year 1879. To preserve a specimen of this fish was under the circumstances impossible, but drawings and copious notes were made on the spot. A jaw was prepared, which however, was afterwards unfortunately lost.

The most remarkable feature in this fish, is undoubtedly the prolongation of the cephalic fins into a triangular pointed depressed snout, as represented in fig. 4. The following measurements were taken from a male adult specimen.

From the tip of the snout to the extremity of the						
ventral fin ... ..	...	...	...	...	...	1130 mm.
Length of tail from dorsal fin	...	...	...	...	...	640 "
Diameter of the disk	...	...	...	...	...	1430 "
Longitudinal diameter of the Spiracle	...	...	...	...	...	50 "
Length of longer spine	...	...	...	...	...	140 "
„ shorter „	...	...	...	...	...	82 "

The colour of the upper surface is greenish-grey with white spots of different sizes, irregularly distributed, the under surfaces dirty white, getting darker on the pectoral fins. The snout is long and triangularly pointed. The eyes small with a vertical oval pupil. Spiracles very large. Two barbed spines on the tail, one side of the longer one is flatter than the other, which is marked with longitudinal furrows and ridges ; the shorter spine is rounder, both are barbed alike. (Figs. 5, 5' and 6.)

The nostrils are in a horizontal line with the eyes.

Two curtain-like flaps overlap the lateral labial folds, which are distinct when the mouth is open; the lower border of the labial flaps is slightly notched. The teeth-plates of the upper jaw are nearly twice as wide as the lower. (48 mm. the upper, 27 mm. the lower.) These plates consist of many longitudinal rows of teeth, of which the middle ones are largest.

On the back of the mouth there are rows of papillæ on the palate, seven in the first row and four in the second; there are similar but smaller papillæ on the sides of the teeth of the lower jaw. (Fig. 4.)

The gill openings are of uniform size, but the distance between the two anterior is nearly double that between the posterior. The claspers are relatively small and cylindrical.

3. DISCOBATIS MARGINIPINNIS.

This Ray was taken at Sorry or Wild Island, one of a group of islands surrounding the Nares Harbour, on the north-west coast of the large Admiralty Islands, during the same expedition as that in which the *Myliobatis* just described was taken, and like it, no specimen has been preserved. However, from drawings made on the spot, a tolerably accurate diagnosis can be made out. It is evidently of the family *Trygonidæ*, and belongs to that section of them, which is without a spine on the tail, but it differs so much from the known genera of that section as to necessitate placing it in a new genus with the following characters.

DISCOBATIS. Nov. gen.

Tail shorter than the disk, cylindrical, without fin or spine, thick at the base and tapering to the apex. Disc circular. Body quite smooth, ventral fins without notch. Teeth small and closely impacted as in the *Trygonidæ* generally.

DISCOBATIS MARGINIPINNIS. N. sp.

Pl. XLVI. Fig. 7-15.

Upper surface, light brown with blue spots, irregularly distributed. Large spiracles (Fig. 9). Iris yellow, flap of the same yellow also, but with a dark margin. *Under surface* white,

with a yellow margin, which, however, does not run all round the disc, but leaves the upper part of the same free. (1) The gill openings of equal size.

Tail, thick and stiff, with a medium blue line on the upper side, and two lateral ones on the sides, half as long as the body.

Dimensions of a ♂ :—

From the upper margin of the disc to the end of tail... 541 mm.

“ “ “ “ to the lower border
of the disc ... 335 mm.

Dentition.—The teeth of *D. marginipinnis* are, at the first glance of nearly the same shape and size in both jaws; they are closely impacted, and present, as in other Trygonidæ, a kind of mosaic pavement “symmetrically arranged.” (Fig. 13.) Inspected more closely, the teeth of each jaw consist of three portions—a median and two lateral ones, which are more distinct in the lower jaw, being divided from each other by a vertical row of teeth with longer and more pointed cusps. (These two rows seem to be characteristic of the species.)

The number of rows of teeth and of teeth in each row, is nearly the same in each jaw. (There are about 32 or 33 transversal rows in each jaw, and from 10-13 teeth in the median vertical rows, whilst in the rows of the lateral portions from 6-8 only.) These numbers being of course dependent upon the age, and very likely, upon the sex of the specimen can not be regarded as characters of the species.

Each tooth has a rhomboidal base supporting a more or less distinct median cusp directed backwards. (Fig. 14.)

The cusps of the teeth of the lower jaw are more obtuse than in the upper, with the exception of the already mentioned two vertical rows which show the largest teeth of the lot with the longest cusps. (Fig. 15.)

Habitat: Pacific Ocean, near the Admiralty Islands. Native names—*Bai* at Sorry and *La* at Andra (another Island on the north-coast of the large Admiralty Islands but further east.)

(1) Examination of Fig. 10 will give a better idea of the shape of the mouth and nostrils than descriptions.

EXPLANATION OF PLATES XLV. and XLVI.

Lettering followed throughout all the figures on both Plates :—

a.—Superior oral fold.

a'.—Continuation of the superior oral fold, enclosing the lower oral fold and forming a second inferior oral fold.

b.—Inferior oral fold.

f.—Internal nasal flap.

n.—External orifice of the nasal groove.

Sp.—Spiracle.

PLATE XLV.

Heterodontus zebra. Grey.

Fig. 1.—Young ♀ from above. (From a photo.) A little more than twice the natural size.

Fig. 2.—The same from the side.

Fig. 3.—Ventral aspect of the anterior part of the head of the same.

Fig. 4.—One of the anterior 5-cusped teeth. (About four times the natural size.)

Fig. 5.—One of the lateral cuspidated teeth. (About four times the natural size.)

Fig. 6.—Lateral view of the anterior part of the head. (About twice the natural size.)

Fig. 7.—The same view, but with the internal nasal flap (*f*) lifted up.

Fig. 8.—Outline of the upper portion of the head from the front, to show the supra-orbital ridges.

PLATE XLVI.

Fig. 1-6.—*Miliobatis punctatus.* McL.

Fig. 1.—The same from above.

Fig. 2.—Ventral aspect of the same.

Fig. 3.—Lateral view of the head.

Fig. 4.—Ventral view of the head, to show the general shape of the snout and of the mouth, and the papillæ on the palate and the sides of the mouth, half natural size.

Fig. 5.—The larger of the two barbed spines. (Natural size.)

Fig. 5'.—A portion of the same twice enlarged, to show the shape of the lateral barbs.

Fig. 6.—The smaller of the two barbed spines. (Natural size.)

Fig. 7-15.—*Discobatis marginipinnis.* McL.

Fig. 7.—The same from above.

Fig. 8.—Ventral view of the same.

Fig. 9.—The eye and spiracle from the side.

Fig. 10.—Mouth and nostrils. The skin below the mouth appears tuberculated.

Fig. 11.—The same as Fig. 10, but the nasal flap on one side is uplifted, to show the mouth and its communication with the nasal cavity.

Fig. 12.—View of the mouth from the inside, to show the notched palatal fold.

Fig. 13.—Teeth of the upper and lower jaw. Slightly enlarged.

Fig. 14.—Front teeth, enlarged about four times.

Fig. 15.—Teeth of the lower jaw with longer and more pointed cusps.